DOCUMENT RESUME

ED 403 131 SE 059 583

AUTHOR Angus, Carolyn; Bell, Ann
TITLE Sciencing with Mother Goose: Activities for Integrating Science and Literature.
PUB DATE 29 Dec 96
NOTE 11p.; Paper presented at the National Science Teachers Association Global Summit on Science and Science Education (San Francisco, CA, December 29, 1996).
PUB TYPE Guides - Classroom Use - Teaching Guides (For Teacher) (052) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Childrens Literature; Integrated Activities; Learning Activities; *Nursery Rhymes; Primary Education; *Science Activities; *Science Process Skills

ABSTRACT

The pairing of Mother Goose rhymes and nursery tales with the scientific thinking process is an effective instructional strategy linking reading and science learning at the primary level. This paper presents several such pairings which stress the basic science processes in grades K-3 of observing, communicating, comparing, ordering, and categorizing. Examples of some activities are: (1) The Gingerbread Man in which students obtain information about objects (gingerbread cookies) and events in their environment by looking, touching, smelling, listening, and tasting; (2) Mother Hubbard's Cupboard where students identify unique qualities of an object (dog milk bones) by comparing it with similar objects; (3) Old Mother Goose and the Golden Egg: A Communicating Activity in which graphs are used to analyze information; (4) There Was an Old Woman: A Comparing Activity where children try developing compare-and-contrast charts for different versions of nursery rhymes and traditional tales; (5) I Know an Old Lady: An Ordering Activity in which children learn to sequence major story events; and (6) Three Bears: A Categorizing Activity where children learn patterns of groups and classes using 6-8 different kinds of bowls. All materials used and procedures followed are described. (PVD)

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SCIENCING WITH MOTHER GOOSE

Activities for Integrating Science and Literature

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NSTA Global Summit on Science & Science Education
San Francisco December 29, 1996

Carolyn Angus
Stone Center for Children's Books
The Claremont Graduate School
131 East 10th Street
Claremont CA 91711
909-607-3670

Ann Bell
Montessori Academy of Bear Creek
9300 West Dartmouth Place
Lakewood CO 80227

303-980-1040

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The pairing of Mother Goose rhymes and nursery tales with the scientific thinking processes is an effective instructional strategy linking reading and science learning. Try out some of the pairings we have suggested. You will find that the delighted response of children to nursery lore is matched by their enthusiastic participation in the hands-on science activities.

The basic science processes—observing, communicating, comparing, ordering, and categorizing—stressed in grades K–3 are the focus here. The nursery rhymes paired with the activities can be found in many Mother Goose collections; we have indicated at least one source, selecting from old favorites and newly published collections.

The Gingerbread Man: Observing Activity 1. You obtain information about objects and events in your environment by observing—by looking, touching, smelling, listening, and tasting.

Resource: Rowe, John A. *The Gingerbread Man: An Old English Folktale.* North-South, 1996.

Materials: "objects" (small gingerbread men) in a bag; observation record sheets (Appendix)

Recipe for Grandma's Gingerbread Men

2 cups flour	1 teaspoon cinnamon	1/2 cup shortening
1 teaspoon baking powder	1/2 teaspoon ginger	1/2 cup molasses
1/4 teaspoon baking soda	1/3 cup sugar	3 tablespoon hot water

Combine all ingredients in a large mixing bowl. Blend well with mixer. Chill dough at least one hour. Roll out dough to 1/8 inch thickness on lightly floured board. Cut with gingerbread man cutter. Place on ungreased cookie sheet. Bake at 400° for 8 to 10 minutes. Cool.

Procedures:
1. Take an object from the bag. Pretend that you don't know its name; call it "the object."
2. List as many observable properties of the object as you can; try for at least 10.
3. Read over your list and code your observations: **SE** if it is based on seeing; **SM** for smelling; **H** for hearing; **TO** for touching; or **TA** for tasting. *How many of your senses did you use? Which sense did you use the most? Least?*
4. Code any quantitative observations with a **Q**. *Did you measure the object's size? Determine its mass?*
5. *Did you list any observations that involved changes?* Code any observation involving a change with a **C**.
6. Check your list for inferences. *Did you say that the object is a cookie or a gingerbread man or that the object is good?* "Cookie" and "gingerbread man" or "good" are not properties you can experience directly—that you can actually observe with your senses. Delete anything from your list that is an inference.
7. Compare your list of observed properties of the object with the lists of other members of your group. *Can your group record at least 10 different observations?* If you reach that goal, try for 10 more.

Mother Hubbard's Cupboard: Observing Activity 2. With careful observation of the unique qualities of an object, you can identify the object when it is compared with similar objects.

Resource: Wegman, William. *William Wegman's Mother Goose.* Hyperion, 1996.

Materials: sack with 8–10 dog milk bones for each group of 6–8 students

Procedures:
1. Empty the bones from the bag onto a workspace. Examine them carefully.
2. Return all the bones to the bag.
3. Pass the bag around so that each person in the group can take one bone. Leave the extras in the bag.
4. Observe your bone carefully for distinguishing characteristics: size, shape, texture, colors, and patterns. You many want to make notes and sketches to record your bone's special characteristics.
5. Return all of the bones to the bag.
6. Again, empty out all the bones.
7. Find your bone. *What makes you sure that you have found your bone?*

- Use the activity sheet "Old Mother Hubbard" (Appendix) to create your own revised rhyme.

Old Mother Goose and the Golden Egg: A Communicating Activity. Communicating is the science process skill that is used to convey ideas. Graphs can be constructed to communicate information.

Resources:
Foreman, Michael. *Michael Foreman's Mother Goose.* Harcourt, 1992.
Opie, Iona (Ed.). *My Very First Mother Goose.* Illus. by Rosemary Wells. Candlewick, 1996.
Polacco, Patricia. *Babushka's Mother Goose.* Philomel, 1995.
Wegman, William. *William Wegman's Mother Goose.* Hyperion, 1996.

- Read the complete rhyme "Old Mother Goose" in *Michael Foreman's Mother Goose* (pp. 120–123). Although children may be familiar with the first verse, few will know the entire story.

Materials: portraits of Mother Goose by various artists (book jackets); gold paper eggs

Procedures:
1. Display the portraits of Mother Goose.
2. Have the group talk about the characteristics of each illustrator's portrait of Mother Goose. Also consider the similarities and differences among them.
3. Each child places a golden egg in the column above the Mother Goose portrait she/he likes best.
4. Analyze the graph that is formed by the columns of golden eggs. *Which artist's Mother Goose was the class favorite? How many liked Rosemary Well's Mother Goose best? How many more (fewer) eggs are there under Michael Foreman's Mother Goose than under William Wegman's Mother Goose? Are there any ties?*
5. Decide on a title for the graph.

Follow-up: Repeat the activity from time to time, using portraits of other nursery rhyme characters (Humpty Dumpty, Old King Cole, Old Mother Hubbard) or characters from nursery tales (Chicken Little, Billy Goats Gruff, Little Red Ridinghood).

There Was an Old Woman: A Comparing Activity. Comparing is the science process skill that deals with concepts of similarities and differences. Charts can be used to develop a logical way of making comparisons. After giving children opportunities to compare groups of real objects, try developing compare and contrast charts for different versions of nursery rhymes and traditional tales.

Resources:
Cousins, Lucy. *The Little Dog Laughed and Other Nursery Rhymes.* Dutton, 1990.
Polacco, Patricia. *Babushka's Mother Goose.* Philomel, 1995.

- Read "There Was an Old Woman" in Lucy Cousin's *The Little Dog Laughed and Other Nursery Rhymes* and "Babushka's Boot" in Patricia Polacco's *Babushka's Mother Goose.*

Materials: chart on large sheet of paper or chalkboard (sample in Appendix)

Procedures:
1. Read each nursery rhyme again.
2. Complete a chart indicating characters, setting, problem, solution, and source of story.

Follow-up: Read different versions of a traditional nursery tale; complete a compare and contrast chart. You can extend these experiences of comparing by identifying similarities and differences in the ways in which the tales are illustrated, too.

I Know an Old Lady: An Ordering Activity. Ordering is the science process skill that deals with patterns of sequence and seriation.

Resource: Karas, G. Brian. *I Know an Old Lady.* Scholastic, 1995.

- Read G. Brian Karas' *I Know an Old Lady.*

Materials: models or pictures of the animals that the old lady swallows

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Procedures:
1. After the story has been read several times, children should be able to sequence the major events. (Here the increase in the size of animals swallowed helps in the sequencing.)
2. When this has been done, read the story one more time to check the order.

Follow-up: Make paper bag puppets of the old lady who swallowed a fly (pattern in Appendix)

The Three Bears: A Categorizing Activity. Categorizing deals with patterns of groups and classes. Objects can be grouped in many different ways.

Resource: Barton, Byron. *The Three Bears.* HarperCollins, 1991.

Materials: 6–8 different kinds of bowls; 2 yarn loops

Procedures:
1. Lay out the yarn loops to make two circular areas.
2. Sort the bowls into two groups slowly and deliberately so that it is clear to the students that you are giving careful thought to the placement of each bowl into one of the groups.
3. When all of the bowls have been placed in one group or the other, tell what your rule of grouping was. For example, "These bowls are white; these are not white," or "These bowls are plastic; these are not plastic."
4. Put all the bowls back into one group. Sort them again, using a different rule. Invite the students to identify the rule of grouping you have used.
5. Have a child sort the bowls; the others identify the rule of grouping used. Repeat the process enough times so that the children understand that there are many different ways of sorting the bowls into two groups.

Follow-up: Make collections of inexpensive spoons for individual or small group categorizing activities.

BIBLIOGRAPHY

Cousins, Lucy. *The little dog laughed and other nursery rhymes.* Dutton, 1990. Fifty-three favorite Mother Goose rhymes are paired with bold, brightly colored, childlike illustrations in this collection for young children. The rhymes are also available in board book editions: *Jack and Jill, Humpty Dumpty, Wee Willie Winkie,* and *Little Miss Muffet* (Dutton, 1996).

Foreman, Michael. *Michael Foreman's Mother Goose.* Harcourt, 1991. This collection contains 223 nursery rhymes, lullabies, nonsense verses, riddles, and tongue twisters. Foreman has created intriguing visual links between the rhymes with his striking watercolor illustrations.

Karas, G. Brian. *I know an old lady.* Scholastic, 1995. In Karas' illustrations for this popular nursery song, the old lady who swallowed a fly gets progressively larger as she swallows a series of animals in an absurd attempt to rectify the original mishap, while a boy equipped with notebook, camera, and binoculars makes careful observations of the old lady's activities.

Opie, Iona. (Ed.). *My very first Mother Goose.* Illus. by Rosemary Wells. Candlewick, 1996. Folklorist Iona Opie has selected more than 60 traditional nursery rhymes and Rosemary Wells has created joyous watercolor illustrations (some of which feature well-loved characters from her other books) for this Mother Goose anthology that will delight children and adults alike.

Polacco, Patricia. *Babushka's Mother Goose.* Philomel, 1995. The 24 nursery rhymes and stories in this collection are variations of traditional folklore that reflect the influence of Polacco's Ukrainian grandmother. Polacco's characteristic folkart illustrations add to the warmth and charm of the selections.

Rowe, John A. *The gingerbread man: An old English folktale.* North-South, 1996. Rowe adds imaginative details in both the text and the brightly colored illustrations for his retelling of this traditional story of the boastful gingerbread man— *"Ha ha ha, hee hee hee,/ I'm the Gingerbread Man/ and you can't catch me!"*

Wegman, William. *William Wegman's Mother Goose.* Hyperion, 1996. Wegman's color photographs for this collection of favorite nursery rhymes feature his Weimaraner dogs portraying Little Bo-Beep, Old King Cole, Little Jack Horner, Little Miss Muffet, and 15 other nursery characters.

Observation Record

Take an object from the container. Pretend that you don't know its name; call it "the object." List as many observable properties of the object as you can; try for at least ten.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____

Old Mother Hubbard

Went to the cupboard,

To fetch her poor dog a bone;

But when she got there,

The cupboard was bare,

And so the poor dog had none.

—Traditional nursery rhyme

Old Mother Hubbard

Went to the cupboard,

To fetch her poor dog _____;

But when she got there,

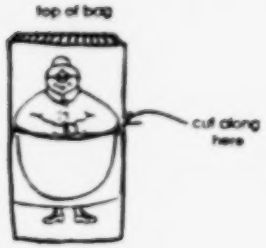
The cupboard was bare,

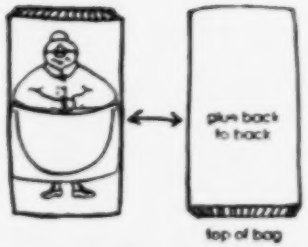
_____.

—A revised rhyme by _____

	_____	_____
Characters		
Setting		
Problem		
Solution		
Source of Story		

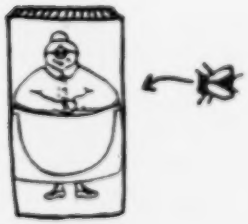
The Old Lady Who Swallowed a Fly





1. Draw an "old lady" on the front of a lunch bag or color and cut out the pattern of an old lady and glue it onto the bag. Then cut an opening across the top of her apron.

2. Glue another lunch bag to the back of the first bag. The back bag should be glued upside down.



3. Draw all the characters that the old lady swallows in the story and cut out the animal patterns.

4. As you tell the story, place each animal in the old lady's "stomach" as she swallows it.

Adapted from "Storytelling with Grandma . . ." by Carolyn Ogston. The Literature Base (June 1991).